

EVIDENCE FOR CONTINENTAL DRIFT

In the early 20th century, German scientist Alfred Wegener proposed the **CONTINENTAL DRIFT THEORY**, which argues that the continents “drifted” to their present locations over millions of years. On a world map, the curves of South America’s eastern coastline and Africa’s western coastline seemed to match, giving Wegener his first piece of evidence for continental drift. The fit suggested that, millions of years ago, all of the continents were joined as a “**supercontinent**” named **PANGAEA**. Wegener also noted that regions of some continents that are far apart have similar rocks, mountain ranges, fossils, and patterns of **PALEOGLACIATION** (evidence of ancient glaciers and the rock markings they left behind).

After Wegener’s death, scientists discovered that the surface of the Earth is broken into **TECTONIC PLATES**, large, moveable slabs of rock that slide over a layer of partly molten rock. According to the **PLATE TECTONIC THEORY**, when tectonic plates move across Earth’s surface, they carry the continents with them. Many volcanoes and earthquake zones on a map reveal the boundaries between the plates. Chains of volcanic islands, such as the Hawaiian Islands, reveal where tectonic plates have passed over geological **HOT SPOTS** – areas where molten rock has risen to the Earth’s surface. This idea was first suggested by Canadian scientist J. Tuzo Wilson.

The process of **SEA FLOOR SPREADING**, first proposed by Harry Hess, provides a mechanism for continental drift. This process involves magma, molten rock from beneath the Earth’s surface. Because it is molten, magma is less dense than the surrounding rock. Thus, magma rises and breaks through the Earth’s crust in certain weak areas. One such place is a **SPREADING RIDGE**, a gap in the sea floor that is gradually widening as tectonic plates move apart. Magma cools and hardens as it intrudes into this gap, pushing older rock aside as it creates new sea floor. The largest of all spreading ridges, and the first one discovered, is the **MID-ATLANTIC RIDGE**, a mountain range running north to south down the length of the Atlantic Ocean.